

Introduction: Biophilosophy

DAVID LIVINGSTONE SMITH

This book is a collection of papers on what I call “biophilosophy.” Because this term will be unfamiliar to most philosophers, and given that it has been used occasionally in the past in a variety of senses, it is appropriate to begin this book with a discussion of what I take it to mean and to justify its use. This discussion will prepare the ground for considering how, as this book’s title suggests, biology *shapes* philosophy and the sense in which biophilosophy provides foundations for naturalism.¹

Biophilosophy is easily confused with the philosophy of biology. Although biophilosophers and philosophers of biology are both concerned with the interface between philosophy and biology, their orientations toward that interface, as I stipulatively define them, are different. Philosophers of biology do not, as such, do biology. Instead, they reflect on biological concepts, biologists’ patterns of inference, and the conceptual relations that obtain between biological concepts and those belonging to other scientific disciplines, among other things. One can think of philosophy of biology as higher-order biological theorizing: just as biologists use the theoretical concepts enshrined in their discipline to map the empirical landscape of the biosphere, philosophers of biology use philosophical resources to draw and redraw the conceptual topography of the biological sciences. Whereas a biologist might inquire into the question of whether a certain phenotype contributes to the fitness of the organisms that possess it, relative to a certain environment, the philosopher of biology might inquire into the question of how the notions of “phenotype,” “fitness,” and “environment” ought to be understood and what entailments each of these understandings has for theoretical biology.

¹ For example, Bunge (1979), Mahner and Bunge (1979), Allen and Bekoff (1995), Gilson (2009), Koutrofinis (2014).

In contrast, biophilosophers invert the relation between philosophy and biology. Instead of using philosophy as a resource for biology, as philosophers of biology do, they use biology as a resource for philosophy.² In this respect, biophilosophy is a mirror image of philosophy of biology even though, as I will explain later, the former is ultimately subordinate to the latter.

Some philosophers explicitly address the difference between biology as explanandum and biology as explanans. For example, Paul Griffiths partitions philosophy of biology into three kinds. One kind applies general considerations from philosophy of science to the special case of biology (e.g. in discussions of the question of whether there are biological laws and what implications this has for the nature of biological explanation). Another is concerned with conceptual issues (or, as Griffiths puts it, “puzzles”) that are specific to biology (e.g. the question of whether species are kinds or individuals or whether they exist at all). Griffiths’ third kind of philosophy of biology, which appeals to biology for help in addressing what he calls “traditional” (by which he means something like “paradigmatic”) philosophical concerns, corresponds to what I call “biophilosophy.”

Griffiths’ terminology is not ideal because it places two very different sorts of philosophical projects under the single taxonomic umbrella of “philosophy of biology.” Also, conventionally, expressions of the form “philosophy of *x*” use *x* to stand for whatever it is that’s being philosophized *about*.³ “Philosophy of biology” suggests that it is biology that is being philosophized about, even though this is not at all what Griffiths means to convey. In contrast, “biophilosophy” isn’t a “philosophy of” designation. Instead (like “neurophilosophy”), it suggests a biologically informed *approach* to doing philosophy.

Peter Godfrey-Smith makes a similar distinction between philosophy of science and what he calls “philosophy of nature,” writing that

In a broad sense, all of philosophy of biology is part of “the philosophy of science.” But ... we can also distinguish *philosophy of science*, in a narrower sense, from *philosophy of nature*. Philosophy of science in this narrower sense is an attempt to understand the activity and the

² For a somewhat different interpretation, see Luc Faucher’s contribution to this volume (Chapter 12).

³ Curiously, this does not always apply the other way around. “Political philosophy” is the philosophy of politics. It does not refer to a politically informed approach to doing philosophy.

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products of science itself. When doing philosophy of nature, we are trying to understand the universe and our place in it. The science of biology becomes an instrument – a lens – through which we look at the natural world. Science is then a resource for philosophy rather than a subject-matter. (2014, p. 4)

Godfrey-Smith's broad notion of "philosophy of science" applied to the biological sphere covers the same territory as Griffiths' broad notion of "philosophy of biology," and his more restricted sense of "philosophy of science" corresponds to Griffiths' first and second kinds of philosophy of biology. His "philosophy of nature" (again, applied to biology) includes Griffiths' third kind of philosophy of biology, as well as my "biophilosophy." However, Godfrey-Smith's category is considerably broader than what I mean to designate as "biophilosophy." Philosophy of nature uses *science* – by which presumably is meant the methodological and theoretical apparatuses of science plus the body of facts discovered by the application of those methods – as a resource of philosophy. As such, it is not specifically biological. The philosopher of nature might equally make use of physics, or chemistry, or psychology as a resource. So, in terms of Godfrey-Smith's vocabulary, biophilosophy turns out to be *special case* of the philosophy of nature. Of course, in common with Griffiths' terminology, "philosophy of nature" also has "philosophy of *x*" form. It also risks confusion with nineteenth-century German *Naturphilosophie* as well as a less unfortunate but nonetheless misleading associations with *philosophia naturalis*.

These sorts of considerations lead me to nominate "biophilosophy" as a name for the kind of philosophical work that these writers have in mind.

Having conceptually distinguished biophilosophy from philosophy of biology, it is important to recognize the crucial connection between them. As Godfrey-Smith points out in a discussion of the relation between philosophy of nature and (narrow-scope) philosophy of science, "These two kinds of philosophical work interact. What you think science is *telling* us about the world will depend upon how you think that part of science *works*" (2014, p. 4). To do biophilosophy well, it is necessary to get the science right. Doing that requires literacy in the relevant sectors of biological science as well as an understanding of the ways in which philosophers of science interrogate those biological claims.

Now for a cautionary note. In her book *Freud's Dream: A Complete Interdisciplinary Science of Mind* (Kitcher 1992a), Patricia Kitcher shows that appropriating scientific claims for interdisciplinary purposes can be a risky business. If the science moves on and the interdisciplinary scholar does not keep abreast of it, she finds herself left in the lurch, having grounded her work in assumptions that are no longer empirically credible (see also Sullaway 1992). Kitcher argues that this unfortunate fate overtook Freud's efforts to develop a complete interdisciplinary science of mind. Freud's "metapsychology" – his account of the unintrospectible neurological systems and processes underpinning human behavior – was grounded in what were, in the late nineteenth century, cutting-edge scientific ideas. As the new century progressed, though, most of these were shown to be false, and psychoanalytic theory was left mired in theoretical anachronisms. Kitcher plausibly argues that cognitive science may be in danger of succumbing to the same problem. "It appears to be quite easy," she observes, "to have more faith in a related discipline than its practitioners, particularly when one's theory relies on its basic concepts or needs to be supplemented by its potential results" (1992a, p. 183). There is an obvious lesson here for biophilosophy. To do biophilosophy well, one needs not only to be familiar with relevant work in philosophy of biology, as Godfrey-Smith emphasizes, but also to keep up with the changing face of the biological sciences.

The contributions to this volume demonstrate that biophilosophical work can be immensely varied. However, there are some broad meta-philosophical constraints that must be honored in order for biophilosophy to be done well – constraints that fall out from the very nature of philosophy. First, biological premises do not (all on their own) *entail* philosophical conclusions. It is a truism that data do not entail theories – so any collection of empirical evidence is consistent with any number of theoretical explanations (although, of course, not all of these will be projectable). It follows that *philosophical* theories are underdetermined by data, and if we think of philosophical theories as metatheoretical structures, then scientific theories underdetermine philosophical ones. If this is right, then there is no *straight* path from biology to philosophy. The path leading from biology to philosophy is more circuitous and, for that reason, more hazardous to negotiate.

I'll approach the question of the role of biology in the philosophical enterprise by considering a very general problem confronting anyone

doing philosophy of any kind. To do philosophy is to blaze a trail through an immensely complex conceptual decision space. As Michael Rosen (2012) so brilliantly describes it, “Philosophy is a holistic discipline. All of its theories and problems relate, in the end, to all the rest.”

So to address one problem we must have – if not *resolved* all the others, at least be prepared to “put them on hold” for the time being . . . For a rough analogy, compare the philosopher with a chess player.⁴ If her argument were to be conclusive, the philosopher would have to be able, when she makes a move (that is, puts forward an argument or advocates a position), to meet all the counter-moves that might be made, and all the counter-moves to her own counter-moves – in fact, to address the whole exponentially expanding tree-structure of possibilities that lie beneath that single move . . . So . . . the philosopher faces a repeated series of uncomfortable choices about what to take for granted and what to put on the table for debate at any stage. (pp. xi–xii)

Deciding which questions to beg and which ones to pursue, as well as how to pursue the ones that one chooses not to beg, requires some principle or set of principles that must, on pain of circularity, be extraphilosophical, for it is trivially true that if philosophy is bounded at all (which it surely is), then it is bounded by something other than philosophy. There is a great deal of territory that lies beyond philosophy, any portion of which might serve to guide one’s trajectory through the endlessly ramifying decision space. One might, for example, use neuroscience as a guide to philosophical enquiry, as neurophilosophers have advocated, or adopt computer science, as many functionalists have done. Or one might be guided by one’s cognitive biases, semantically dignified by philosophers as “intuitions.”⁵ Doing philosophy requires, paradoxically enough, a kind of creative blinkering, a closing down of options, a filtering of possibilities. Yoking philosophy to biology is one way to do this. That is, roughly speaking, how biology *shapes* philosophy.

⁴ Philosophers’ fondness for using chess analogies may say something about the class background and intellectual pretensions of professional philosophy. After all, most of the same points that philosophers use the chess analogy to make could just as well be made using the examples of basketball, tennis, or boxing.

The game of chess is conventionally associated with the solitary exercise of pure intellect. It’s a Cartesian game. See also Dennett (2006).

⁵ I do not mean to suggest that intuitions are without epistemic value any more than I mean to suggest that cognitive biases are without epistemic value.

Biology's role in shaping philosophy does not involve interdisciplinarity as it is often conceived – that is, as a sort of melding of two disciplines or the incorporation of the elements of one discipline into another. Biophilosophy does not work like this because philosophy is not a discipline in the sense that biology is a discipline. Of course, there is a perfectly good sense in which philosophy is a discipline. There are departments of philosophy in universities, philosophy conferences, and learned journals. Philosophers employ a specialized language that is opaque to outsiders, make use of certain distinctively philosophical communicative and inferential practices, and reward certain kinds of expertise. In contrast, biology is individuated both by its domain and by the body of knowledge that it has accumulated about that domain through implementing research conducted in accord with certain methodological norms. Philosophy, however, does not have a proper domain – or, to put the point differently, philosophy addresses *every* domain. It is distinguished by the kinds of questions that it asks, the manner in which it goes about answering them, and the norms governing what answers count as acceptable rather than by the subject area toward which those questions are addressed.

It's the logical relation between philosophy and biology that delimits what biophilosophy is and thereby determines what it isn't. As I have pointed out, it is not a mixture of biological and philosophical claims (although biological claims can serve as premises in biophilosophical arguments) and it is not an entailment of philosophical claims from strictly biological premises. It is not a reduction of philosophical claims to biological ones either (which would involve the commission of a category error). The relations that obtain between biology and philosophy are considerably looser but no less significant than the alternatives canvassed earlier.

Speaking very generally, biophilosophers use biology to constrain, guide, and inspire philosophical theorizing. They use it to constrain philosophy by closing off certain conceptual options. In doing so, they use it to carve out a pathway through conceptual decision space. And they use it as a source of inspiration by drawing on biological models in the service of philosophical ends.⁶

⁶ Millikan's (1984) *Language, Thought, and Other Biological Categories: New Foundations for Realism* is a paradigmatic example of the philosophical use of a biological model.

This brings me to this volume's subtitle: "New Foundations for Naturalism." "Naturalism" is an elastic idea. Most contemporary philosophers consider themselves to be naturalists, but this seeming consensus encompasses a wide variety of views, and it will serve no good purpose to attempt to itemize them here. Very generally, naturalisms are grouped into ontological and methodological varieties. Ontological naturalism concerns the *kinds* of things that exist. According to this view, everything that exists is either (numerically) identical to or constituted by physical things. So "ontological naturalism" is for the most part just another name for physicalism, or anti-supernaturalism, and is compatible with various finer-grained positions of reductionism, antireductionism, and eliminativism.

Obviously, naturalism of *this* sort is only tangentially related to biophilosophy. Biological items are physical items. But if physicalism is true, then everything else is physical too, so metaphysical naturalism, as it is commonly understood, does not have any special connection to the biological realm. However, one might distinguish metaphysical naturalism per se from *biological metaphysical naturalism*, which has it that nonparadigmatically biological attributes of organisms are identical to or constituted by paradigmatically biological items. This, too, might be understood from a reductive, antireductive, or eliminativist perspective – but in each of these cases, biology is used as a touchstone for metaphysical credibility.

Methodological naturalism is considerably more difficult to pin down and is probably best thought of as a philosophical sensibility rather than a commitment to a set of propositions. Most characteristically, methodological naturalists conceive of philosophy as in some sense *continuous* with science. From this perspective, the border between philosophy and science is a blurry, if not entirely fictional one. Methodological naturalists tend to make a deflationary assessment of "pure" philosophy. They tend, on the whole, to favor a posteriori claims over *a priori* ones, to pursue synthetic rather than analytic truths, to value contingency as much as necessity, to be suspicious of conceptual analysis, and to be wary of thought experiments set in exotic possible worlds. In short, they are not afraid of getting their hands dirty by grappling with the empirical domain, and they privilege those investigative procedures that reliably deliver knowledge about that

domain.⁷ Biophilosophy is clearly – perhaps paradigmatically – methodologically naturalistic.

Biophilosophy provides *foundations* for naturalism in biology in much the same way that any scientific discipline provides foundations for naturalism. Put a bit more explicitly, biophilosophy provides one way of grounding the conceptual apparatus of philosophy in the extra-philosophical world – the “real” world, that is, the world that we deploy our concepts and metaconcepts to make sense of – the world of plants and porcupines, genes and proteins, neurons and muscle, the world that makes it possible for us to do philosophy and on which all of the philosophy that we do depends.

⁷ As I mentioned earlier, naturalisms come in many flavors. For a more nuanced look at the varieties of naturalism and the arguments offered on their behalf, see P. S. Kitcher (1992b), Rosenberg (1996), Flanagan (2006), Papineau (1993), Almeder (1998), and the useful collection of papers in de Caro and Macarthur (2004).